UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 9
75 Hawthorne Street
San Francisco, CA 94105

MEMORANDUM

DATE: November 26, 2013

SUBJ: Hewlett Packard 620-640 Page Mill Road Superfund Site
Comments on November 2013 Indoor Air Testing Work Plan Addendum

FROM: Melanie Morash, Remedial Project Manager
US EPA Region 9

TO: Roger Papler, Engineering Geologist
San Francisco Bay Regional Water Quality Control Board

Thank you for the opportunity to review and comment on the above-referenced document. Please do not hesitate to contact me if there are any questions, or if I can be of further assistance (morash.melanie@epa.gov / 415-972-3050).

General Comment

EPA recognizes and appreciates all of the vapor intrusion work activities that have been conducted to date at the subject site, and hopes to work closely with HP and Varian (the Responsible Parties or RPs for the site) and the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) to finalize this Work Plan Addendum in time to complete the next round of vapor intrusion-related sampling before the end of winter (January - February 2014), during which time the potential for vapor intrusion may be higher.

Recognizing the temporal and spatial variability of indoor air and subsurface concentrations, EPA generally recommends collecting more than one round of sampling and from multiple locations. In reviewing the lines of evidence that have been collected for the HP Site, EPA Region 9 has identified that multiple rounds of indoor air sampling have not been collected, and that sampling has not been conducted during colder weather months, when the potential for vapor intrusion may be higher. EPA appreciates HP and Varian's cooperation in preparing an Indoor Air Testing Work Plan Addendum that seeks to address these issues and assess vapor intrusion potential during the colder months of the year.

Comment #1: "Revisions to Short Term Action Levels" section, last paragraph

A guidance document is referenced as being included in Exhibit A to the Indoor Air Testing Addendum (Addendum), however this document was not included with the submittal. Please revise Addendum accordingly, or otherwise note in the text that this or other relevant guidance documents will be included when available. EPA Region 9 plans to shortly issue guidelines and supplemental information to the Regional Water Board for vapor intrusion investigations at the South Bay state-lead groundwater National Priorities List (NPL) sites, inclusive of the subject site. This information, once finalized, would be appropriate to cite here.

Comment #2: "Revisions to Short Term Action Levels" section

Please revise this section to include the following TCE short-term action levels:

Exposure Scenario	***Prompt Response Action Level (micrograms/cubic meter)***
Residential	2 $\mu g/m^3$
Commercial/Industrial (8-hour workday)	9 $\mu g/m^3$
(10-hour workday)	7 $\mu g/m^3$

Comment #3: "Commercial Building Testing with HVAC System Off" section

This section states, "Collection of indoor air samples with the HVAC system off is intended to provide EPA additional data with which to evaluate possible soil gas transport into buildings and the results would not be considered representative of building indoor air quality under normal operating conditions."

Please revise this section by adding the following sentence: "However, these HVAC-off sampling results will inform the vapor intrusion investigations in the development of the full range of possible exposure scenarios."

Comment #4: "Commercial Building Testing with HVAC System Off" section

Please revise this section to clarify that testing will occur at both *on*-property buildings located in the former source areas, as well as buildings in the *off*-property vapor intrusion study area. During a meeting between EPA Region 9, the Regional Water Board, and representatives of the property owner of the 601 California Avenue and 650 Page Mill Road buildings, it was indicated to the Agencies that the owners intend to cooperate with the RPs in coordinating sampling efforts.

Comment #5: "Commercial Building Testing with HVAC System Off" section

Please revise this section to specify that pathway sampling in commercial buildings shall also be conducted, as part of the "multiple-lines-of-evidence" vapor intrusion evaluation. Typical pathway

samples may include from near floor drains and loose-fitting pipes in bathrooms and office kitchen areas, near electrical outlets, in stairwells, and from certain small, apparently poorly-ventilated rooms or spaces (for example, elevator mechanical rooms, elevator shafts, or server/utility closets).

Comment #6: "Commercial Building Testing with HVAC System Off" section

This section states, "Sample duration will be selected depending on normal building occupancy patterns (e.g., 8-hour, 10-hour or 12-hours)."

Based on input from commercial building owners and tenants, EPA Region 9 recommends use of the 10-hour workday for determining the appropriate action levels for commercial/industrial buildings. However, site-specific adjustments can be made as needed for workplaces with longer work schedules. Please revise this section accordingly.

Comment #7: "Grab Sample Collection" section

The last sentence of this section states, "Grab sample results are not considered representative of indoor air quality and therefore are not appropriate for comparison to indoor air screening or action levels established for this project."

Please revise this section to add that grab samples, however, may be used to inform the vapor intrusion investigation, for example, by identifying additional sampling locations for comparison to the project screening levels or by helping to develop the conceptual site model for the subject site.

Comment #8: "Cold Season Resampling of Residential Buildings" section

In reviewing the lines of evidence that have been collected for the HP Site, EPA Region 9 has identified as a data gap the lack of crawlspace sampling, which must be addressed in order to complete the vapor intrusion evaluations.

Please revise this section to include concurrent crawlspace/basement (as appropriate) sampling with residential indoor air breathing zone sampling in the Off-Property Study Area, together with a proposed methodology for sample placement.

Comment #9: "Cold Season Resampling of Residential Buildings" section, 2nd paragraph

This section states, "For comparability, samples will be collected…over 24 hours, consistent with the prior sampling."

EPA Region 9 supports the use of longer-term passive samplers to help assess the temporal variability of indoor air vapor intrusion-related contaminant concentrations. The longer-term sampler provides a greater duration over which to average indoor air vapor intrusion levels for the purposes of completing the vapor intrusion evaluation, however EPA Region 9 is open to discussing sampling strategies for both the passive sampler and TO-15 canister.

Comment #10: "Cold Season Resampling of Residential Buildings" section, last paragraph

This section states, "EPA will provide notification and secure access from property owners/tenants and provide public outreach information to property owners or tenants regarding the justification for re-sampling their homes."

Consistent with the approach for the first round of indoor air sampling, EPA will continue to provide community involvement and outreach support for the subject site, and will provide notification and public outreach information to affected community members. However, EPA does not plan to change its approach regarding securing access, and encourages the RPs to first make their best efforts to secure access from residents and commercial/industrial business owners and tenants for the purposes of completing the vapor intrusion evaluations. EPA will assist with obtaining access in the event that the RPs are unsuccessful in their efforts with property owners/tenants.

Comment #11: "Cold Season Resampling of Residential Buildings" section, 1st paragraph

This section proposed the following sampling approach: "…previously sampled residential buildings located on Pepper Avenue and one multi-family residential building located on Sheridan Avenue would comprise the subset of buildings to be resampled."

EPA's preferred approach consists of increasing the subset of residential buildings which will be targeted for sampling in January and February 2014 to all those residential buildings identified in the original study area – overlying the original 50 microgram per liter (µg/L) shallow-zone TCE groundwater contour line, as identified in the original Work Plan for the subject site, and based on groundwater data collected in June and September 2011. An alternate, though less favored, approach consists of sampling at the twenty-one residential (single and multi-family) buildings that were previously sampled during the spring/summer 2012 sampling events.

Regardless of which single-family residences are sampled, EPA recommends that the next round of testing include, at a minimum, all of the multi-family residential buildings where volatile organic compounds (VOCs) were previously detected in pathway (elevator shafts, sumps, drains) or garage samples, which includes buildings 19, 20 and 21.

A discussion of the confidence level and uncertainty in the groundwater data and contour lines would also be appropriate here, and what additional buildings (residential or commercial) might be identified for sampling based on any alternate curve fittings or regression analysis.

Comment #12: "Cold Season Resampling of Residential Buildings" section

Please revise this section to propose a more detailed step-out process for expanding the sampling program. For example, discussion of timing of step-out to remaining homes overlying the 50 µg/L TCE groundwater contour that have not yet been sampled or otherwise re-sampled during the colder weather.

Comment #13: "Supplemental Vapor Intrusion Assessment" section

This section should also be expanded to identify and highlight the residential and commercial buildings located above the 5 µg/L shallow-zone TCE groundwater contour line, using the most recently collected groundwater data for the subject site, together with an accompanying uncertainty analysis, as referred to above.

Comment #14: "Supplemental Vapor Intrusion Assessment" section

This section states that the supplemental assessment will include, "Visual observations of buildings to ascertain, to the extent practical from external observation, whether a given building likely has a basement or other potential preferential pathway of concern."

It is the Agency's experience that for certain buildings, external visual assessment is insufficient to properly evaluate a building's potential for vapor intrusion, and that comprehensive building walk-throughs are necessary to assess preferential pathways or other building features that may elevate vapor intrusion potential. However, external visual assessment can be a useful tool for adding buildings to a study area. Please revise this section accordingly to reflect that building walkthroughs will be necessary at each building in the Off-Property Study Area.

Comment #15: "Supplemental Vapor Intrusion Assessment" section

This section states, "Information from these activities will be considered, together to assess what, if any, additional actions may be warranted."

EPA supports the initial agreed upon prioritization of conducting vapor intrusion evaluations at commercial and residential buildings overlying higher TCE shallow A-zone groundwater contamination (greater than 50 µg/L for residential buildings and greater than 100 µg/L for commercial buildings). However, the Agency would like to clarify that the Work Plan Addendum should be revised to define the Vapor Intrusion Off-Property Study Area as the area bounded by the estimated TCE shallow zone groundwater contamination area greater than 5 µg/L.

While a phased approach to the remaining sampling is acceptable, full evaluation drawing on the multiple-lines-of-evidence approach, out to the off-property groundwater boundary line, or 5 µg/L for TCE in shallow zone groundwater, will be expected, and a discussion of the timing and strategy for conducting step-out sampling, as appropriate, to 5 µg/L for TCE should be discussed here. A comprehensive evaluation of the multiple lines of evidence collected for each property should be used in determining the potential for vapor intrusion at particular buildings and whether additional investigation and/or mitigation is warranted. Any proposal to exclude particular buildings from indoor air sampling must be supported by a robust, site- and building-specific multiple-lines-of-evidence analysis.

As previously reported in documents prepared by Stantec Consulting, groundwater at the subject site is generally shallow, ranging between approximately 5 feet below ground surface (bgs) to 55 feet bgs, with the A1U-zone TCE plume overlying groundwater at about 20 feet bgs. Ongoing data collection efforts at other similar vapor intrusion sites in Region 9, as well as nationally, have shown vapor intrusion potential into buildings overlying lower groundwater TCE concentrations (less than 50 µg/L

for residential buildings and less than 100 µg/L for commercial buildings), at levels exceeding health protective indoor air levels. Factors include, but are not limited to, location relative to source areas, impacts due to seasonal fluctuations in groundwater levels, preferential pathways into a building and other building-specific characteristics that facilitate upward migration of subsurface vapors into interior living and work spaces.

The use of the TCE 5 µg/L groundwater concentration as defining the extent of the Vapor Intrusion Evaluation Study Area is reasonable, supported by use of EPA's vapor intrusion screening level calculator, the generic default groundwater-to-indoor air attenuation factor of 0.001 and the appropriate Henry's Law conversion, empirical data, and mathematical modeling.

EPA supports a phased multiple-lines-of-evidence approach in prioritizing vapor intrusion investigations, for example: (1) colder weather indoor air sampling event and commercial building HVAC-off and HVAC-on sampling within the original Off-Property Study Area; (2) data evaluation and identification of data gaps, with subsequent additional multiple-lines-of-evidence data collection and analysis; (3) targeted step-out's to specific commercial/residential buildings or streets overlying lower contaminant concentration contour lines; and finally (4) full step-out and building-specific evaluation to off-property vapor intrusion study boundary line, or 5 µg/L TCE.